

**SEMICONDUCTOR PROCESS CHAMBER ELECTRODE
AND METHOD FOR MAKING THE SAME**

ABSTRACT OF THE DISCLOSURE

Disclosed is a system for processing a semiconductor wafer through plasma
5 etching operations. The system has a process chamber that includes a support chuck
for holding the semiconductor wafer and a pair of RF power sources. In another case,
the system can be configured such that the electrode is grounded and the pair of RF
frequencies are fed to the support chuck (bottom electrode). The system therefore
includes an electrode that is positioned within the system and over the semiconductor
10 wafer. The electrode has a center region, a first surface and a second surface. The
first surface is configured to receive processing gases from a source that is external to
the system and flow the processing gases into the center region. The second surface
has a plurality of gas feed holes that are continuously coupled to a corresponding
plurality of electrode openings that have electrode opening diameters that are greater
15 than gas feed hole diameters of the plurality of gas feed holes. The plurality of
electrode openings are configured to define an electrode surface that is defined over a
wafer surface of the semiconductor wafer. The electrode surface assists in increasing
an electrode plasma sheath area in order to cause a shift in bias voltage onto the wafer
surface, thereby increasing the ion bombardment energy over the wafer without
20 increasing the plasma density.

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